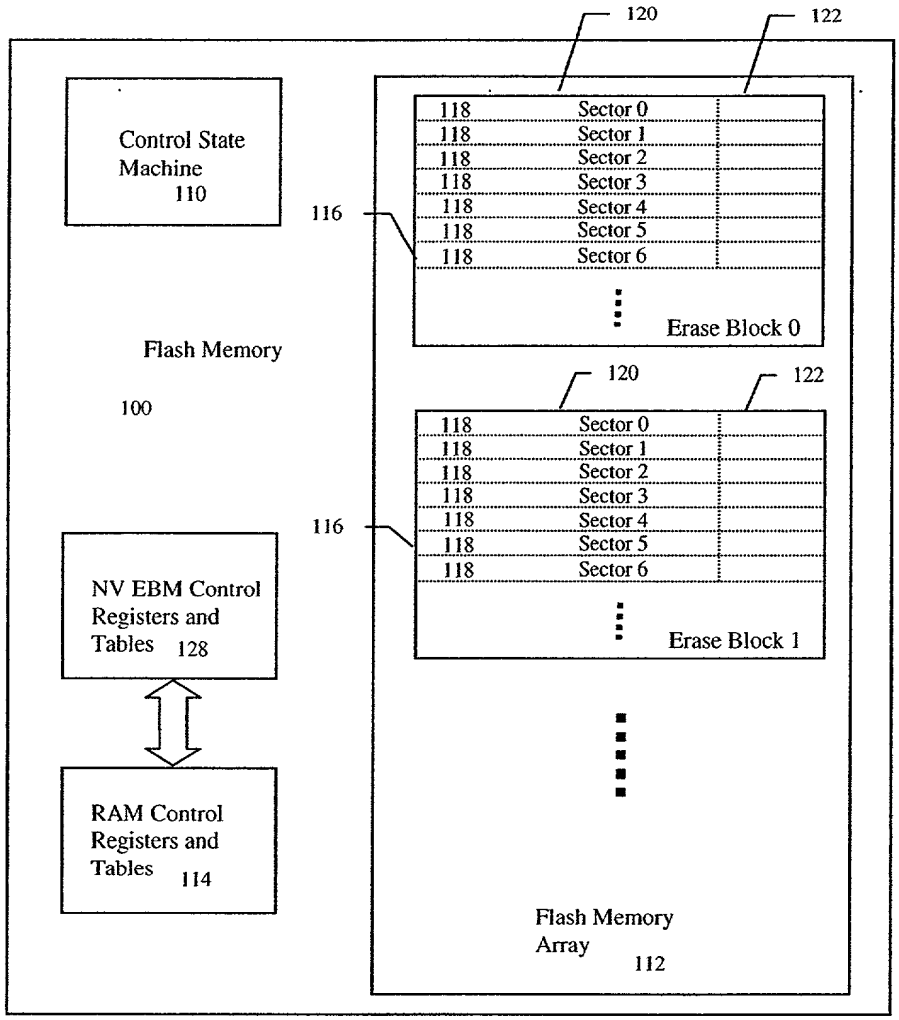


FIG. 1
Prior Art

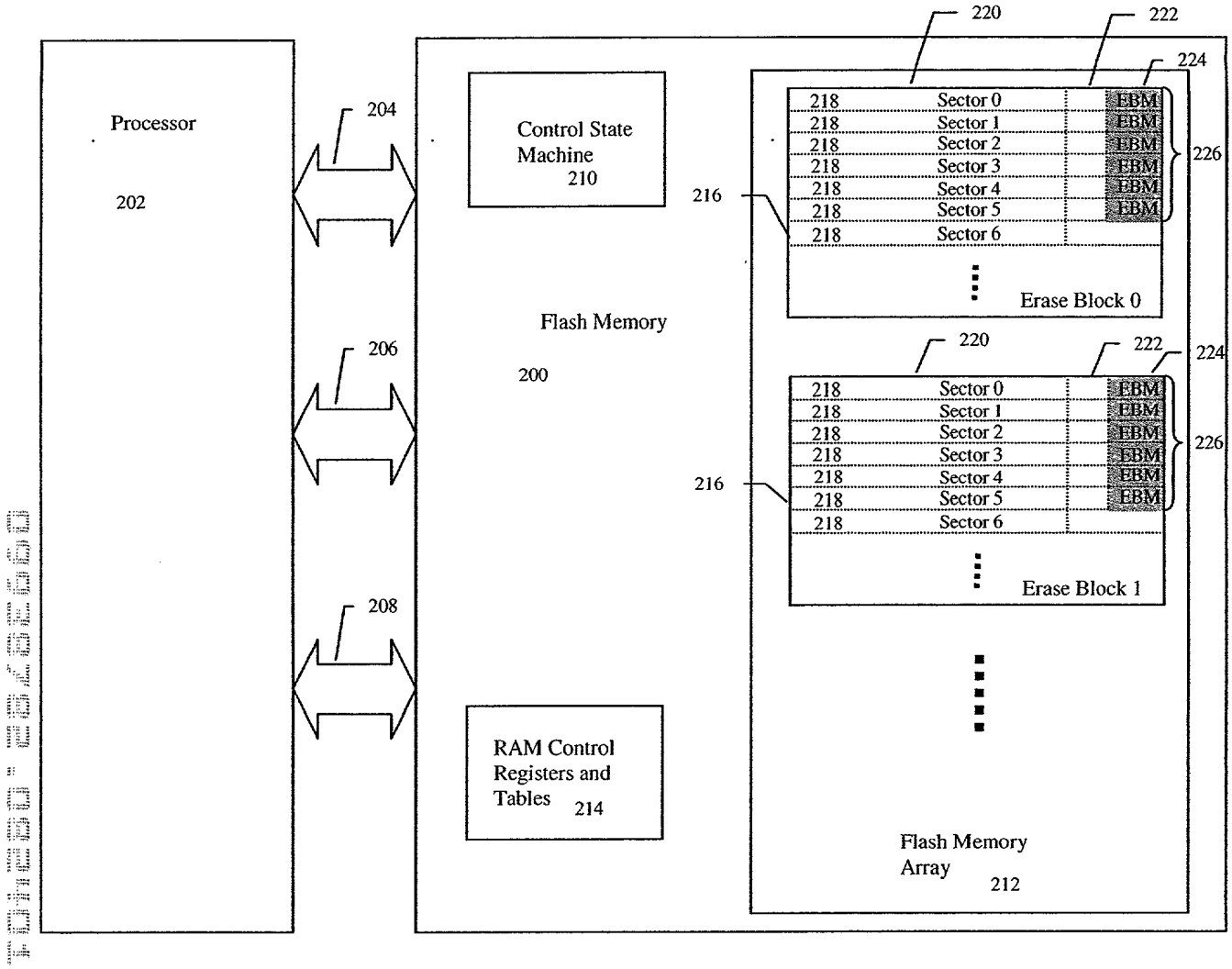

Processor
202
204
206
208
Control State Machine
210
Flash Memory
200
RAM Control Registers and Tables
214
220
222
224
226
216
218
Sector 0
Sector 1
Sector 2
Sector 3
Sector 4
Sector 5
Sector 6
EBM
Erase Block 0
Erase Block 1
Flash Memory Array
212

FIG. 2

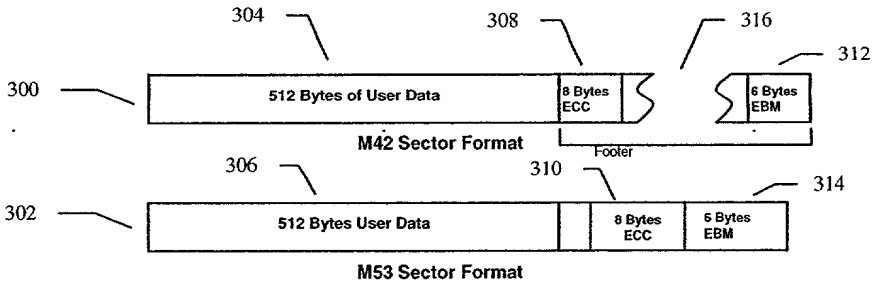

304
308
316
312
300
512 Bytes of User Data
8 Bytes ECC
6 Bytes EBM
M42 Sector Format
Footer
306
310
314
302
512 Bytes User Data
8 Bytes ECC
6 Bytes EBM
M53 Sector Format

FIG. 3

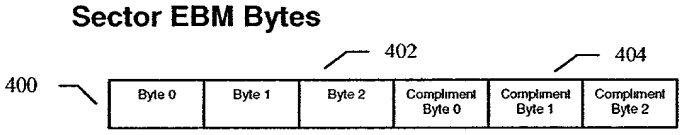

Sector EBM Bytes
402
404
400
Byte 0
Byte 1
Byte 2
Compliment Byte 0
Compliment Byte 1
Compliment Byte 2

FIG. 4

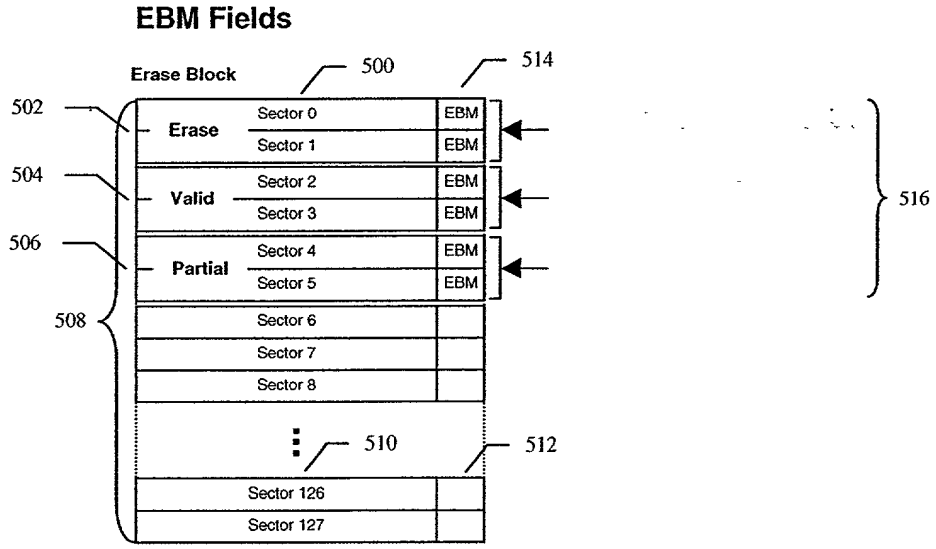


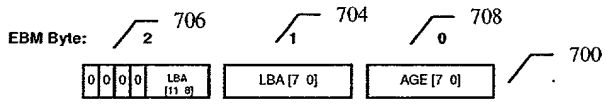
FIG. 5

Erase Block States

602 *Erase Block State*	*EBM Fields/ EBM Sectors 0/1* (600, 606)	604 *EBM Sectors 2/3* (608)	*EBM Sectors 4/5* (610)
612 Invalid	Invalid	Invalid	Invalid
614 Erased	AA55AA	Erased	Erased
616 Partially Filled	AA55AA	Erased	Block Identifier
618 Fully Valid	AA55AA	Block Identifier	Block Identifier

FIG. 6

EBM Entry Type 1, Logical Block of Sectors



EBM Entry Type 2, Block of Repeated Logical Sector Address

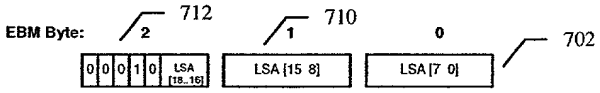


FIG. 7

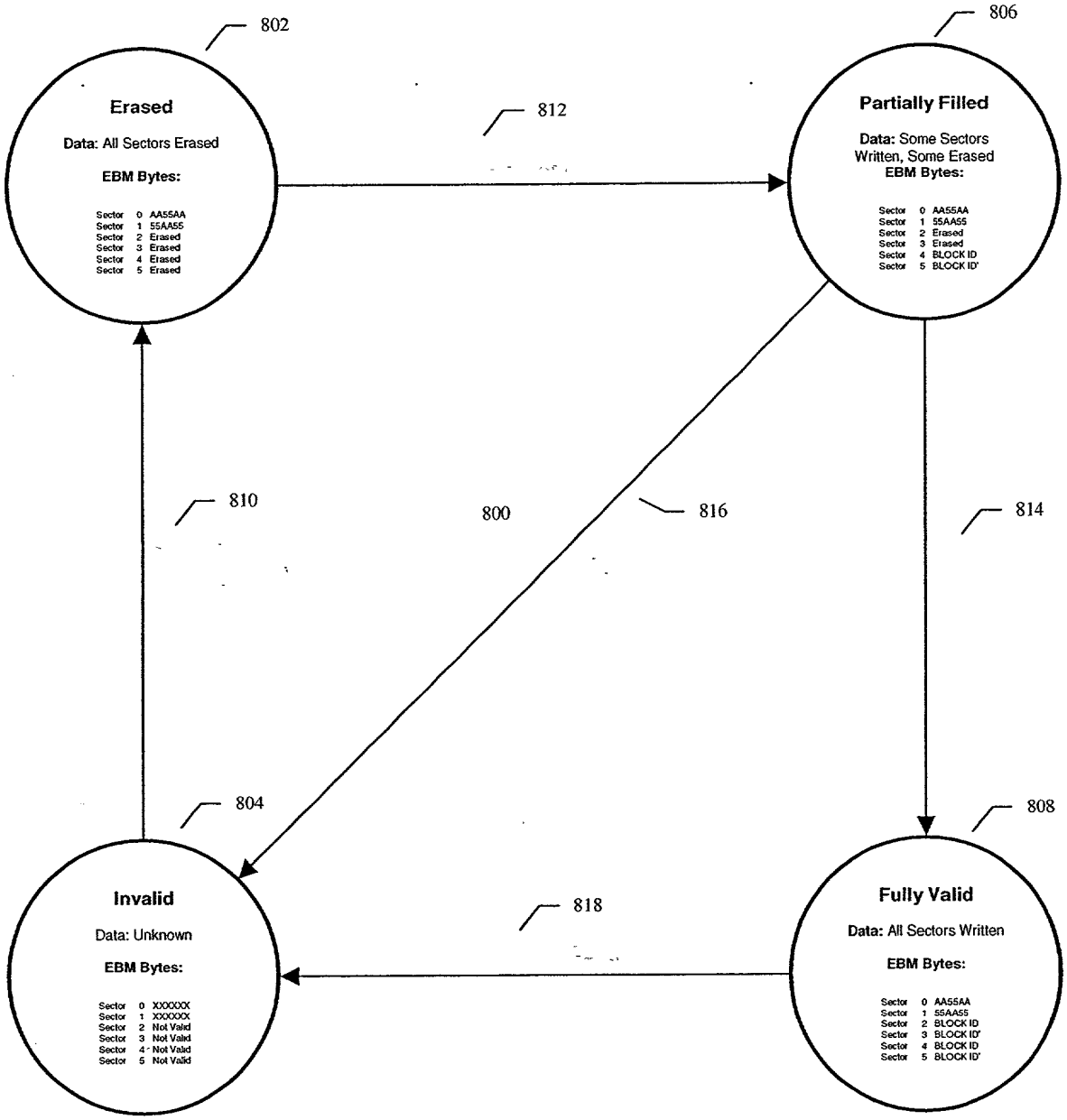

802
Erased
Data: All Sectors Erased
EBM Bytes:
Sector 0 AA55AA
Sector 1 55AA55
Sector 2 Erased
Sector 3 Erased
Sector 4 Erased
Sector 5 Erased
812
806
Partially Filled
Data: Some Sectors Written, Some Erased
EBM Bytes:
Sector 0 AA55AA
Sector 1 55AA55
Sector 2 Erased
Sector 3 Erased
Sector 4 BLOCK ID
Sector 5 BLOCK ID'
810
800
816
814
804
808
Invalid
Data: Unknown
EBM Bytes:
Sector 0 XXXXXX
Sector 1 XXXXXX
Sector 2 Not Valid
Sector 3 Not Valid
Sector 4 Not Valid
Sector 5 Not Valid
818
Fully Valid
Data: All Sectors Written
EBM Bytes:
Sector 0 AA55AA
Sector 1 55AA55
Sector 2 BLOCK ID
Sector 3 BLOCK ID'
Sector 4 BLOCK ID
Sector 5 BLOCK ID'

FIG. 8

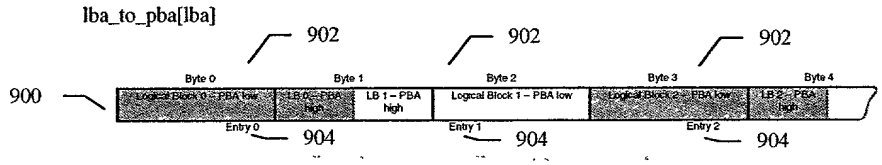

lba_to_pba[lba]
902
902
902
900
Byte 0
Byte 1
Byte 2
Byte 3
Byte 4
LB 1 – PBA high
Logical Block 1 – PBA low
Entry 0
Entry 1
Entry 2
904
904
904

FIG. 9

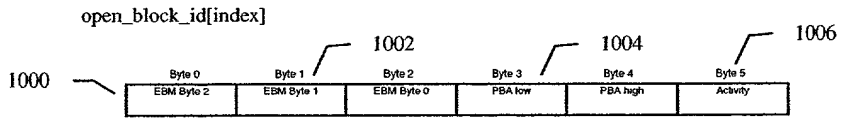

open_block_id[index]
1002
1004
1006
1000
Byte 0
Byte 1
Byte 2
Byte 3
Byte 4
Byte 5
EBM Byte 2
EBM Byte 1
EBM Byte 0
PBA low
PBA high
Activity

FIG. 10

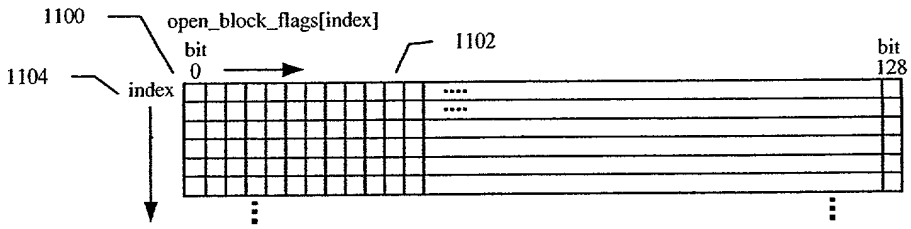


FIG. 11

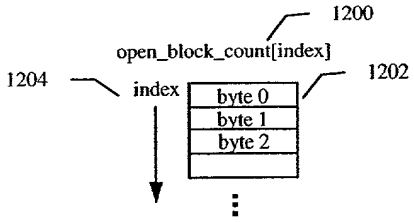


FIG. 12

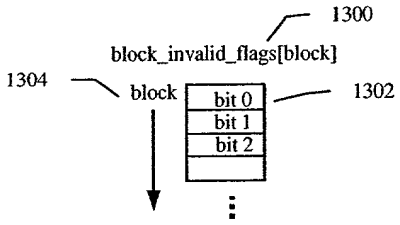


FIG. 13

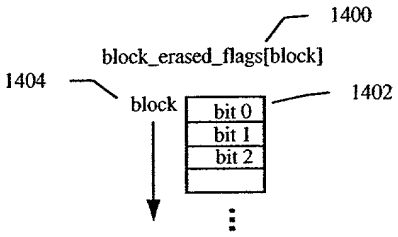


FIG. 14